

Montana: 86° at Virginia City. *California*: 108° at Red Bluff, 105° at Visalia. *Oregon*: 107° at Umatilla. *Washington Territory*: 94° Olympia.

Those marked with a star (*) are reported by U. S. Army Post Surgeons or Voluntary Observers.

Minimum Temperatures.—*Maine*: 47° at *Gardiner, 48° at Eastport and *Orono. *New Hampshire*: 31° on summit of Mt. Washington, 44° at *Dunbarton and Crafton. *Vermont*: 43° at *Woodstock, 49° at Burlington. *Massachusetts*: 48° at *South Lee; 52° at Boston. *Rhode Island*: 58° at Newport. *Connecticut*: 55° at New London. *New York*: 43° at *Waterburg, 52° at Rochester, 59° at New York City. *New Jersey*: 53° at Atlantic City and *Newark. *Pennsylvania*: 42° at *Franklin, 53° at Pittsburg. *Delaware*: 64° at *Dover. *Maryland*: 45° at *Cumberland, 62° at Baltimore. *District of Columbia*: 59° at Washington. *Virginia*: 52° at Wytheville. *West Virginia*: 53° at Morgantown. *North Carolina*: 52° at *Highland, 63° at Charlotte. *South Carolina*: 71° at Charleston. *Georgia*: 64° at Atlanta. *Florida*: 69° at Pensacola and Punta Rasa. *Alabama*: 69° at Montgomery. *Mississippi*: 64° at Vicksburg. *Louisiana*: 64° at Shreveport. *Texas*: 43° at Fredericksburg, 49° at Ft. Elliott, 57° at Pilot Point. *Ohio*: 52° at Cleveland. *Kentucky*: 60° at Louisville. *Tennessee*: 59° at Nashville. *Arkansas*: 59° at *Mt. Ida, 62° at Little Rock. *Michigan*: 43° at Marquette, 52° at Detroit. *Indiana*: 52° at *Spiceland, 55° at Indianapolis. *Illinois*: 46° at *Marengo, 55° at Springfield. *Missouri*: 49° at *Pierce City, 59° at St. Louis. *Kansas*: 53° at *Yates Centre and *Wellington, 56° at Leavenworth. *Wisconsin*: 49° at *Neillsville, 52° at La Crosse. *Iowa*: 48° at *Nora Springs, 52° at Davenport. *Nebraska*: 54° at Omaha. *Indian Territory*: 55° at Ft. Gibson. *Minnesota*: 57° at *Minneapolis. *Dakota*: 42° at Deadwood. *Colorado*: (28° on summit of Pike's Peak,) 32° at *Summit, 49° at *Hermosa. *New Mexico*: 46° at Santa Fé. *Wyoming*: 49° at Cheyenne. *Utah*: 45° at Salt Lake City. *Nevada*: 41° at Winnemucca. *Arizona*: 60° at Burkes. *Idaho*: 41° at Boise City. *Montana*: 37° at Virginia City. *California*: 51° at San Francisco, 55° at Sacramento. *Oregon*: 45° at Roseburg. *Washington Territory*: 42° at Olympia.

Those marked with a star (*) are reported by U. S. Army Post Surgeons or Voluntary Observers.

Ranges of Temperature.—The monthly ranges will appear from an examination of the above minimum and maximum temperatures. The greatest daily ranges vary as follows: New England, from 18° at Wood's Holl to 32° at Eastport; Middle Atlantic States, 19° at Cape May to 24° at Albany and 29° at Norfolk; South Atlantic States, 15° at Cape Lookout to 25° at Jacksonville and 26° at Wilmington; Eastern Gulf States, 15° at New Orleans to 26° at Montgomery; Western Gulf States, 16° at Galveston to 28° at Corsicana; Ohio valley and Tennessee, 21° at Cairo to 32° at Pittsburg; Lower Lakes, 19° at Erie to 28° at Cleveland; Upper Lakes, 20° at Chicago to 36° at Duluth; Upper Mississippi valley, 23° at La Crosse to 29° at Des Moines; Red river of the North valley, 34° at Breckenridge to 38° at Pembina; Missouri valley, 25° at Omaha to 37° at Fort Stevenson and 40° at Bismarck; Texas, 24° at San Antonio to 28° at Rio Grande City and 34° at Fort Elliott; Eastern Rocky Mountain Slope, 26° at Fort Sill to 36° at North Platte and 48° at Fort Keogh; Rocky Mountains, 23° on summit of Pike's Peak to 33° at Virginia City and 40° at Cheyenne; Western Plateau, 33° at Salt Lake City, to 39° at Boise City and 46° at Winnemucca; California, 20° at San Francisco to 35° at Red Bluff and 40° at Visalia.

Ice was reported on the summit of Mount Washington, 29th; at Summit, Rio Grande Co., Col., 11th and 30th.

Frost.—*Utah*.—Salt Lake City, 12th. *Colorado*.—Summit of Pike's Peak, 6th, 17th, 18th, 26th, 27th, 30th, and 31st. At Summit, Rio Grande Co., frequent. *New Hampshire*.—Summit of Mount Washington, 29th.

PRECIPITATION.

The general distribution of rain-fall, for July, 1880, is shown on chart No. III, as accurately as possible, from about 500 reports. The table on this chart shows the average precipitation for the several districts compared with the normal values. The rain-fall has been above the normal along the Gulf and Atlantic coasts, in the St. Lawrence valley and Upper Lake region, about normal over the Lower Lakes and Lower Missouri valley and below normal elsewhere. The characteristic features of the rains during the month have been (1) their local nature, (2) their short duration and (3) their copiousness. Thus, in Kansas and Missouri, while heavy rains fell during the first few days of the month, during the latter part of the month both states suffered from drought. In the paragraph on Specially Heavy Rains, some remarkable records will be found, among which may be noted a heavy rain-fall of 1½ inch in 8 minutes at Paterson, N. J.

Special Heavy Rains.—1st, Independence, Ia., 1.75 inches in 45 minutes; St. Louis, 2.07 in. 1st and 2nd, College Hill, Cincinnati, Ohio, 3.25. 2nd, Lacopia, Ind., 2.74 in; Mexico, Mo., 3.88. 2nd and 3rd, McMinnville, Tenn, 3.98; Strafford, Vt., 3.50; Leavenworth, 5.11; Mystic, Conn., 2.95 in; Woodstock, N. H., 4.00 in. 3rd, Socorro, N. M., 1.14 in.; Rowe, Mass., 1.80 in. in 2 hours. 4th, Ft. Sill, Ind. Ty., 2.31. 5th, Fallsington, Pa., 5.38; Sandy Springs, Md., 5.00 in. in 2 hours and 30 minutes; White Plains, N. Y., 1.80 in. in 6 hours; Somerville, N. J., 4.34 in. 5th and 6th, Trenton, N. J., 4.13 in.; Princeton, N. J., 4.44 in.; Trenton, N. J., 6.72 in.; New Brunswick, N. J., 2.53 in.; Linden, N. J., 2.34 in.; Paterson, N. J., 2.22 in.; Somerville, N. J., 2.08 in. 6th, Mesquite, Tex., 2.00 in.; Ft. Randall, Dak., 2.50 in. 7th, Omaha, Neb., 2.42 in.; Clear Creek, Neb., 2.50 in. in 20

minutes and 4.50 in. in 1 hour and 27 minutes. 8th, Des Moines, Ia., 4.00 in. 9th, Little Mountain, Ohio, 2.75 in. 10th, Independence, Ia., 4.50 in. 10th and 11th, Columbus, Ohio, 3.10 in.; Ruggles, Ohio, 4.00 in. 12th, Flushing, N. Y., 4.15 in. in 2 hours. 12th and 13th, Clinton, Mass., 2.64 in.; Willets Point, N. Y., 3.34 in. 13th, Point Pleasant, La., 1.03 in. in 1 hour. Pembina, 2.00 in. in 30 minutes; Paterson, N. J., 1.50 in. in 8 minutes. 14th, Silver City, N. M., 1.79 in. 14th and 15th, Shreveport, La., 2.50 in. 15th, Mendon, Mass., 2.25 in.; Eagle Pass, Tex., 1.84 in. 16th, Point Pleasant, La., 1.00 in. in 35 minutes. 17th, Belmont, N. H., 2.60 in. 17th and 18th, New Ulm, Tex., 2.50 in. 18th and 19th, New Corydon, Ind., 2.69 in. 19th, San Antonio, Tex., 1.76 in.; St. Augustine, Fla., 1.16 in. in 1 hour; Chambersburg, Pa., 2.59 in. 19th and 20th, Trenton, N. J., 3.24 in.; Ft. Wallace, Kan., 3.90 in.; Clarksville, Tex., 4 in. 20th, Fallsington, Pa., 2.53 in.; Antrim, N. H., 2.50 in.; Westborough, Mass., 2.36 in.; Blooming Grove, Pa., 2.60 in.; Sandy Springs, Md., 2.04 in. in 4 hours; Point Pleasant, La., 1.30 in. in 56 minutes; Ft. Union, N. M., 2.62 in. Ashland, N. H., 2.10 in.; Mesquite, Tex., 3.00 in.; Henrietta, Tex., 1.55 in.; Baltimore, Md., 3.49 in. 20th and 21st, Dover, Del., 2.50 in.; Clinton, Mass., 2.56 in. 21st, Cape Hatteras, 3.17 in.; Mesquite, Tex., 3.00 in.; Melissa, Tex., 2 in. 21st and 22nd, Linden, N. J., 3.46 in.; Ellsworth, N. C., 5 in.; Lenoir, N. C., 2.30 in.; 22nd, Fallington, Pa., 2.67 in.; Princeton, N. J., 2.70 in.; Trenton, N. J., 3.28 in.; New Brunswick, N. J., 2.22 in.; Barnegat, N. J., 2.28 in.; White Plains, N. Y., 3 in.; Point Pleasant, La., 2.01 in. in 5 hours; Ft. Barrancas, Fla., 3.75 in.; McKavett, Tex., 4 in. 22nd and 23rd, Kitty Hawk, N. C., 4.78 in.; Augusta, Ga., 3.47 in.; Cape Lookout, 5.82 in.; Cape Hatteras, 3.52 in.; Ft. Adams, R. I., 2.44 in. 23rd, Eagle Pass, Tex., 2.08 in.; Pikes Peak, 2.39 in.; Cedar Keys, 2.43 in.; New Bedford, Mass., 2.45 in.; St. Augustine, Fla., 1.80 in. in 1 hour; Ft. Union, N. M., 2.25 in. 23rd and 24th, Fall River, Mass., 2.55 in. 24th, Wilmington, N. C., 3.50 in. 24th and 25th, Ellsworth, N. C., 3 in. 25th, Stockton, Tex., 2.48 in.; Brownsville, Tex., 2.80 in. 26th, Eagle Pass, Tex., 1.58 in.; St. Augustine, Fla., 2.32 in. 26th and 27th, New Corydon, Ind., 4.47 in. 27th, Mason, Tex., 1.15 in.; Castroville, Tex., 2.17 in.; Fredericksburg, Tex., 2.10 in.; Wilmington, N. C., 2.50 in. 27th and 28th, Cedar Keys, 3.88 in.; New Ulm, Tex., 4.50 in. 28th, Point Pleasant, La., 3.02 in.; Shreveport, La., 4.52 in.; Castroville, Tex., 1.76 in.; Ft. Barrancas, Fla., 1.38 in. in 1 hour and 40 minutes. 28th and 29th, Fayette, Miss., 2.70 in. 29th, Point Pleasant, La., 2.31 in.; Ft. Wallace, Kan., 3.84 in.; Mason, Tex., 1.69 in.; Pilot Point, Tex., 1.08 in.; Fredericksburg, Tex., 1.30 in. 30th, Demmison, Tex., 2.38 in.; St. Augustine, Fla., 2.33 in. 31st, Oregon, Mo., 1.81 in.; Greenfield, Mo., 1.90 in.

Largest Monthly Rain-falls.—Freehold, N. J., 15.12 in.; Wilmington, N. C., 12.84 in.; Fort Wallace, Kan., 12.59 in.; Fallsington, Penn., 12.51 in.; Wellsboro', Penn., 12.30 in.; Paterson, N. J., 12.06 in.; Point Pleasant, La., 11.33 in.; New Orleans, La., 11.22 in.; Princeton, N. J., 11.13 in.; St. Augustine, Fla., 11.09 in.; Ft. Barrancas, Fla., 11.03 in.; Shreveport, La., 10.97 in.; Ellsworth, N. C., 10.88 in.; Independence, Ia., 10.40 in.; Concho, Tex., 10.26 in.; Austin, Tenn., 10.13 in.; Flushing, N. Y., 10.10 in.; White Plains, N. Y., 10.00 in.; Kittyhawk, N. C., 9.94 in.; New Corydon, Ind., 9.13 in.; Cedar Keys, Fla., 9.10 in.; Cape Hatteras, N. C., 9.06 in.; Somerville, N. J., 8.86 in.; New Ulm, Tex., 8.75 in.; Willets Point, N. Y., 8.71 in.; Vineland, N. J., 8.64 in.; Trenton, N. J., 8.57 in.; Sandy Springs, Md., 8.41 in.; Mesquite, Tex., 8.38 in.; Clinton, Mass., 8.12 in.; Fort Union, N. Mex., 7.98 in.; Norfolk, Va., 7.84 in.; Woodstock, N. H., 7.83 in.; Castroville, Tex., 7.74 in.; Pike's Peak, Col., 6.69 in.; Stockton, Tex., 7.27 in.; Clarksville, Tex., 6.50 in.; Camp Apache, Ariz., 5.83 in.; Camp Grant, Ariz., 5.63 in.

Smallest Monthly Rain-falls.—Point San Jose, San Geronio, Princeton, San Francisco and Red Bluff, Cal., Ft. McDermitt, and Winnemucca, Nev., and Coalville, Utah, none; Los Angeles, Sacramento, and Visalia, Cal., Yuma, Ariz., Battle Mountain, and Terrace, Nev., trace; Roseburg, Oreg., 0.01 in.; Boise City, Idaho, and Golconda, Nev., 0.02 in.; Burkes, Ariz., 0.04 in.; Albany, Oreg., and Palisade, Nev., 0.05 in.; Browns, Nev., and San Diego, 0.09 in.; Campo, Cal., 0.12 in.; Carson City, Nev., 0.13 in.; Truckee, Cal., 0.16 in.; Phoenix, Ariz., 0.18 in.; Halleck, Nev., 0.24 in.; Eola, Or., 0.25 in.; Ft. Douglas, Utah, 0.30 in.; Umatilla, Or., 0.48 in.; Olympia, W. T., 0.52 in.; Portland, Or., 0.59 in.; Humboldt Wells, Nev., 0.60 in.; Salt Lake City, 0.80 in.

Rainy Days.—The number of days on which rain or snow has fallen, varies as follows: New England, 11 to 19; Middle Atlantic States, 10 to 18; South Atlantic States, 9 to 19; Eastern Gulf States, 11 to 21; Western Gulf States, 7 to 14; Ohio valley and Tennessee, 6 to 16; Lower Lake region, 10 to 19; Upper Lake region, 13 to 21; Upper Mississippi valley, 8 to 14; Lower Missouri valley, 9 to 12; Red River of the North valley, 8 to 11; Eastern Rocky Mountain Slope, 7 to 11; Texas, 4 to 16; Rocky Mountains, 7 to 24; Middle Plateau, 0 to 4; California, 0 to 2; Oregon, 3 to 9.

Cloudy Days.—The number varies in New England from 9 to 14; Middle Atlantic States, 5 to 12; South Atlantic States, 5 to 16; Eastern Gulf States, 2 to 12; Western Gulf States, 2 to 10; Ohio valley and Tennessee, 3 to 10; Lower Lake region, 3 to 8; Upper Lake region, 1 to 9; Upper Mississippi valley, 2 to 8; Lower Missouri valley, 2 to 5; Red River of the North valley, 2 to 3; Eastern Rocky Mountain Slope, 3 to 9; Texas 3 to 16; Rocky Mountains, 2 to 10; Middle Plateau, 1 to 4; California, 0 to 3.

Hail.—Hail fell frequently throughout the month and the following extracts from observers' reports and newspapers attest the severity of some of these local storms. Big Creek, Mo., 1st,

severe hail storm, crops destroyed and many geese and pigs killed. Wright City, Mo., 1st, several buildings badly damaged by hail, stones eight inches in circumference. Springfield, Ill., 1st, very violent hail-storm, stones two inches in diameter and from two to three inches in length. Dongola, Union Co., Ill., 1st, several hundred acres of corn and wheat destroyed by hail, stones as large as hen's eggs. Harrisonville, Mo., 2nd, great damage to crops by hail. Cheyenne, 3rd, heavy hail-storm destroying much window glass. Statesville, N. C., 14th, six miles east of station, violent hail-storm doing great damage to corn and cotton crops. Potter county, Penn., 16th, 6.30 a. m., hail-stones 4 to 6 inches in circumference; all crops along track of storm were entirely destroyed; track one mile wide and from three to five miles in length; course southwest to northeast. Massebesic, N. H., 16th, hail-stones covered the ground. Manchester, N. H., 16th, hail-stones one inch in diameter. Genoa, Neb., 17th, hail stones 1 to 1½ inch in diameter covered with spikes ¾ inch in length; all crops in path of storm entirely destroyed and stock severely bruised. Rochester, N. Y., 18th, hail-stones one inch in diameter; great damage was caused to growing crops near Spenceport, Lewiston and Gasport. Trenton, N. J., 20th, hail-stones size of peas. Hudson, Mich., 23rd, great damage to corn and oat crops by hail; many farm houses had windows demolished; birds and fowls killed; course southwest to northeast; track one-half to one mile wide. Medina, Mich., 23rd, very violent; hail-stones four inches in circumference. Waupaca, Wis., 26th, during afternoon, terrible hail-storm passed from southwest to northeast; stones covered the earth several inches deep and were from the size of walnuts to two inches in diameter. One measured nine and a-half inches in circumference. All corn and green crops were cut to the ground; large limbs of trees were broken off and some animals reported killed; track of storm about two miles wide. Steven's Point, Wis., 26th, violent hail-storm, stones six to ten inches in circumference and from four to eight inches deep on the ground, killing turkeys, geese, lambs, sheep and thousands of prairie chickens. Shingles were entirely cleaned from the roofs of many buildings and over 100 farms were entirely divested of all green crops. Leaves were cut from the forest trees leaving them as bare as in winter. Track of storm about 4 miles wide and from 8 to 10 miles long. Loss estimated at \$100,000. Coalville, Utah, 27th, heaviest storm for years; ground white with stones. Buzzard's Bay, Mass., 29th, 5 p. m., very violent hail-storm; stones two inches deep on the ground and many of them ¾ inch in diameter. Hail-stones as large as filberts fell in Foxborough and other portions of Norfolk county; at Monument Beach corn-fields were destroyed and at Aggawam the ground was covered to a depth of three inches, many of the stones being over an inch in diameter. Fort Adams, R. I., 29th, violent hail-storm. Hail was also reported at Wellsboro, Pa., on the 16th and at Norwalk, Ohio, on the 23rd.

Snow—fell on the summit of Pike's Peak, 9th, 10th, 13th to 17th, 19th, 20th, 21st, 23rd to 26th, 28th. On the summit of Mt. Washington, 29th.

Floods.—Umatilla, Or., 1st, navigation suspended, because of high water in river; portages submerged at the Dalles, Walla Walla and Umatilla, but no serious damage as yet. Portland, Or., 1st, considerable portion of city inundated. Sandy Springs, Md., 5th, fields badly washed, mill dams and fences carried away. Van Metre, Ia., 7th, 8th, railroad train submerged three feet, and forty rods of embankment washed away. Winterset, Ia., 7th, 8th, crops and fields badly washed, and all railroad communication obstructed. Hannibal, Mo., 7th, 8th, \$200,000 worth of wheat, and \$100,000 worth of fences, barns, dwellings and farming implements, destroyed by breaks in the Sny levee on the Illinois side of the Mississippi river. Des Moines, Ia., 8th, cellars filled with water, streets and culverts badly washed. About eight miles south of station damage more severe; portion of railroad track and several bridges, washed away, considerable damage to buildings. Cleveland, 9th, streets and culverts badly washed, street-car lines submerged, cellars flooded and sidewalks carried away. Champaign, Ill., 9th, immense damage to growing and harvested crops; highways badly washed, and bridges carried away. Rowe, Mass., 10th, highways and railroad tracks badly washed, and bridges carried away. La Crosse, Wis., 10th, much damage to wheat and oats. Waterloo, Iowa, 10th, 11th, 10 p. m. to 3:20 a. m.; severe rain-storm destroying crops and washing out roads and bridges; three children were drowned by the overflowing of a "run" previously dry. Independence, Iowa, 10th, 11th, water upon the floor of the opera house and Presbyterian church three feet deep; great amount of damage to all kinds of property in vicinity. Pueblo, Col., 13th, very heavy rains, creeks badly swollen; two families camping out near by were washed away and drowned. Colorado Springs, 13th, immense damage in El Paso and surrounding counties; several bridges on the Denver and Rio Grande Railroad washed out, and 2,700 feet of railroad between this station and Manitou carried away; immense damage to growing crops. Umatilla, Or., 18th, a cloud burst up west Butter Creek, washed away trees, fences and bridges, and caused considerable damage to other property. Baltimore, 20th, damage to city by flooding, \$50,000. Colorado Springs, Col., 23rd, very heavy rains and washouts; three railroad bridges washed away. San Antonio, Tex., 28th, railroad tracks badly washed, all communication obstructed. Stockton, Tex., 28th, 120,000 bushels of wheat, oats and barley destroyed by heavy rains. Shreveport, La., 28th, great destruction to cotton crop, Carlisle, Pa., 29th, terrific rain storm, water ran four feet deep in some of the roads, flooding many houses and causing great damage to crops.

Droughts.—*New York*: Waterburg, 1st to 10th, drought, severe. *Massachusetts*: Westborough, 1st to 12th, great need of rain. *Illinois*: Augusta, 20th to 30th, very dry. *Kansas*: Wellington, 21st to 31st, all vegetation suffering. *Georgia*: Gainesville, 31st, crops suffering very severely.

Missouri: Louisiana, 31st, cisterns generally empty and creeks dried up; Glasgow, 31st, many springs stopped running. "The Missouri Weather Service" reports drought very severe in the north, northeast and central sections of the State, vegetation damaged.

Rainfall during June, received too late to be used in June Review.—*Arizona:* Whipple Barracks, Ft. McDowell and Ft. Mojave, none; Ft. Lowell, 0.20 inch.; Ft. Bowie, 1.50; Ft. Verde, 0.14; Ft. Apache, 0.53; Camp Thomas, 0.55. *California:* Benecia Barracks, Angel Island, Presidio, Oakland and Poway, none. Ft. Gaston, 0.12. *Colorado:* Ft. Lyons, 0.55; Ft. Collins, 0.86. *Dakota:* Ft. Stevenson, 4.10; Ft. Sisseton, 6.00; Ft. Sully, 2.35; Ft. Totten, 3.17. *Idaho:* Ft. Lapwai, 1.15; Lewiston, 1.07. *Montana:* Ft. Benton, 4.50; Ft. Shaw, 2.39; Ft. Ellis, 8.01; Ft. Keogh, 0.51; Ft. Logan, 0.49; Ft. Assiniboine, 2.44. *Oregon:* Ft. Stevens, 3.15; Ft. Klamath, 0.38. *Washington Territory:* Ft. Canby, 2.58; Ft. Townsend, 0.92; Dayton, 1.00; Neah Bay, 1.27; Bainbridge Island, 2.21.

RELATIVE HUMIDITY.

The percentage of mean relative humidity for the month ranges as follows: New England, from 62 to 87; Middle Atlantic States, 59 to 88; South Atlantic States, 62 to 80; Eastern Gulf States, 65 to 73; Western Gulf States, 64 to 76; Ohio valley and Tennessee, 60 to 76; Lower Lake region, 61 to 71; Upper Lake region, 67 to 77; Upper Mississippi valley, 61 to 69; Missouri valley, 59 to 62; Red River of the North valley, 69 to 73; Eastern Rocky Mountain Slope, 54 to 73; Texas, 62 to 77; Middle Plateau, 17 to 33; California, 31 to 82; Oregon, 57 to 69. *High stations* report the following averages not corrected for altitude: Pike's Peak, 71; Mt. Washington, 82; Virginia City, 37; Denver, 47; Santa Fe, 40.

WINDS.

The prevailing directions of the wind during July, 1880, is shown by arrows, flying with the wind, on chart No. II. To the east of the Rocky Mountains the predominating winds have been *southerly*, with an easterly trend over Texas, and a westerly one from the Eastern Gulf and Atlantic coasts to the Lake region. At the Rocky Mountain stations, over the Middle and Northern Plateau Districts and North Pacific region, the directions are *northwesterly*. On the summit of Mt. Washington, N. H., the direction is NW, and the continuous record of the wind velocity shows a total monthly movement of 17,943 miles; the maximum hourly velocity during the month was NW, 72 miles on the 10th. The same data for the summit of Pike's Peak is SW., 8,493 miles, and SW., 44 miles on the 10th. Maximum velocities exceeding 50 miles per hour were recorded at Umatilla (SW., 52, on the 18th); North Platte, (NW., 80, on the 3rd) and Chincoteague, (SW., 53, on the 1st.)

Total Movements of the Air.—The following are the *largest* total movements in the various districts: Mt. Washington, (summit of) 17,943 miles; Cape Lookout, 10,964; North Platte, 9,643; Rio Grande City, Tex., 9,594; San Francisco, 9,186; Cape Hatteras, 8,904; Chincoteague, Va., 8,768; Indianola, 8,554; Delaware Breakwater, 8,510; Pike's Peak, (summit of) 8,439; Umatilla, Or., 8,392; Portsmouth, N. C., 8,365; Wood's Holl, 7,892; Thatcher's Island, 7,822. The *smallest* are: Lynchburg, 1,364 miles; La Mesilla, N. M., 1,440; Augusta, 2,013; Silver City, N. M., 2,057; Visalia, Cal., 2,378; Nashville, 2,342; Des Moines, Iowa, 2,406; Morgantown, 2,543; Springfield, Mass., 2,777; Socorro, N. M., 2,872; Knoxville, 2,940; Cincinnati, 2,997.

Local Storms.—Jacksonburg, Ohio, 2nd, 4 p. m., small tornado passed two miles south of village in a direction from SW. to NE., width of track about 60 rods. "There were two inverted cones of vapor, one reaching from the clouds nearly to the earth and then joining the apex of the lower one extending upward from the ground. During its passage it was accompanied by a noise similar to the violent escape of steam. Sheaves of wheat and many other objects were drawn upwards and quickly lost sight of. The ground over which the storm passed appeared as if drenched by a flood." Cairo, Ill., 2nd, 1:35 p. m., very heavy wind-storm, lasting about 15 minutes, unroofing buildings and blowing down fences and trees. Chattanooga, Tenn., 2nd, severe wind-storm, blowing down trees and fences; 3rd, 6:25 to 6:47 p. m., severe NW. storm, during which the wind reached a velocity of 60 miles per hour for a period of 5 minutes, and averaged 48 miles for 15 minutes, unroofing buildings and uprooting trees, damage \$1,500. Reports from Walker and Catoosa counties, in northern Georgia, show exceedingly violent storms on this date, and great loss to agricultural interests. Columbia, S. C., 5th, violent tornado, unroofing buildings, uprooting trees and destroying crops and fences. Clear Creek, Neb., 7th, 4:30 p. m., violent tornado approached from the southwest, passing about 3 miles north of station; 15 to 20 buildings were destroyed and great damage caused to crops. A large quantity of water was reported to have been taken out of Platte river as the storm crossed it. Hanover, N. H., 16th, afternoon severe tornado passed over southeastern part of village; "many buildings unroofed, several literally torn to pieces; trees all along the course of the storm were torn up by the roots and large branches were twisted off and carried long distances; course, SW. to NE. and path of destruction about two miles long and 200 rods wide;" Portsmouth, N. C., 28th, 5:30 p. m., whirlwind struck the beach on south side of inlet forming dense pillar of sand with rotary motion from right to left and moving from SE. to NW., a distance of three miles. It then suddenly receded southeastward to the sea where it disappeared. Diameter of whirl 30 yards.